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MONTGOMERY COUNTY FARM BUREAU

Cooperative Extension Work in Agriculture and Home Economics

Montgomery County Farm Bureau Association
United States Department of Agriculture
New York State Department of Agriculture
New York State College of Agriculture

APRIL, 1916

Farm Management Analysis

. . . *of* . . .

76 Montgomery County (N. Y.) Farms

For the Year 1914

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INTRODUCTION

During the past year the Montgomery County Farm Bureau took 76 farm records in the townships of Canajoharie and Minden. The purpose of the work was to determine the important factors affecting farm profits in this region; to obtain averages which the individual farmer may use in studying his own farm; and to help the men whose records were taken to analyze the farm business to find out how to make it more profitable. This circular is prepared to return the results of this study to the men who gave the records and to the other farmers in the county.

The records include the complete farm business for a year. Besides all the farm receipts and expenses, an inventory of the stock and feed on hand at the beginning and end of the year was secured. An inventory of the farm machinery was also taken. Where accounts were kept, the records were taken from them as far as possible. In other cases careful estimates were given. The questions are so arranged and itemized that a reliable record can be obtained from careful estimates.

No information is published or given out in any way regarding an individual farm. Only averages of a number of farms are used.

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CROPS GROWN

The most important crops of the region were corn, oats and hay. These three occupied 94 per cent of the crop area. Some potatoes, wheat, buckwheat, apples and a few other crops were grown. Most of the crops were fed on the farms. About one-tenth of the corn, one-tenth of the oats and one-quarter of the hay were sold. Hay was by far the most important cash crop. Table I is a complete summary of the crops grown and sold.

Table I. Crops Grown and Sold on 76 Montgomery County Farms in 1914.

Crop	No. of farms growing crop	Total acres	Average yield per acre	Total yield	No. of farms selling crop	Amount sold	Average price	Total value sold
Corn for grain	53	332.5	82 bu.	27282	13	2753	$ .56	$1548
Silage corn	50	611	9.2 T.	5609	1	40	1.00	40
Other corn	27	70.75			4			570
Potatoes	76	70.9	112 bu.	7939	50	3006	.49	1470
Winter wheat	9	25.75	20 bu.	513	5	241	1.15	277
Spring wheat	5	9	16 bu.	141	2	23	1.04	24
Oats and mixed grain	74	1350	35 bu.	46723	22	4523	.57	2597
Buckwheat	16	55.6	22 bu.	1228	10	646	.84	543
Straw					24	204.2	6.85	1399
Hay	76	3367.8	1 T.	3233.5	40	802.4	15.86	12724
Alfalfa	27	146	2.6 T.	383	2	5	17.20	86
Apples		101			15			1187
Hops	4	22			3			3119
Miscellaneous		114.8						2718
Total		6277.1						$28302

The average crop area per farm was 83 acres. The remainder of the farm was divided as follows: woods 10 acres, pasture not tillable (aside from woods) 7 acres, waste, buildings and roads 8 acres and tillable pasture 27 acres. This makes a total area of 135 acres, 110 of which are tillable.

LIVE STOCK

Little stock was kept besides cattle. The receipts from all other stock amounted to only $134 per farm. The average number of cows per farm was 17 and the value of the milk sold per cow $73.* All but two of the farms kept 6 or more cows. The milk was sold at wholesale to New York milk companies or to creameries. The average price of milk for the 37 farms with the price given was $1.35 per hundred weight.

The cows were fed almost entirely on home grown feed. The grain purchased averaged $125 for 17 cows.

Nearly all the cows were Holsteins but only a few were registered. All but 8 of the farms reported grade Holstein cows and these 8 had mixed herds. Eleven of the herds with Holsteins had some registered cows. The total number of registered cows was 54.

LABOR INCOME

Farm profits are best measured in terms of "labor income." Labor income is what the farmer has for his year's work after all farm expenses and interest on the capital invested in the farm, stock, tools, etc., have been subtracted. Table II illustrates the method used in figuring labor income.

Table II. Method of Figuring Labor Income

Average of 76 Montgomery County Farms for 1914

Receipts		
Crops sold	$372.	
Milk and milk products	1201.	
Cattle increase and sales	224.	
Other stock receipts	134.	
Miscellaneous receipts	84.	
Increase in feed	85.	
Total farm receipts		$2100.
Expenses		
Hired labor	$206.	
Board of hired labor	62.	
Family labor	207.	
Grain feeds purchased	125.	
Seed	57.	
Insurance	21.	
Taxes	98.	
All other farm expenses	272.	
Farm income (difference)		$1052.
Total farm expenses		$1048.
Capital		
Real estate (135 acres)	$7925.	
Live stock	2031.	
Machinery and tools	698.	
Feed and supplies	180.	
Cash to run farm	95.	
Total	$10929.	
Interest on capital at 5%		$546.
Labor Income		$506.

The receipts include sales of crops, milk, stock, etc., and any increase in the value of stock or supplies during the year. The total receipts on the 76 farms average $2100. Expenses include the value of farm work done by members of the family and the value of board furnished to hired help as well as the cash expense for labor, grain feeds, insurance, taxes, etc. Machinery depreciation and upkeep of buildings are also charged. Household and personal expenses are not part of the farm business and therfore are not considered. As the value of the farmer's own labor is not included in the expenses, the difference of $1052 between the total receipts and the total expenses represents what the farmer had for his own labor and interest on the capital invested in the farm business. Subtracting interest at 5 per cent on the average capital of $10929 leaves $506 as the farmer's labor income. Besides this labor income the farmer had a house to live in and farm products for home use, such as milk, eggs, poultry, garden produce, etc.

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*Two farms which fatted calves instead of selling milk are not included in this average of $73.

The labor incomes of the 76 farms varied widely. The lowest was minus $485, that is the receipts lacked $485 of paying the expenses and interest on the capital. The largest labor income was $3511. Figure I shows the distribution of the labor incomes. The labor income of each farm is indicated by a dot and the average of $506 by the star. Eleven of the farms had minus labor incomes and eleven made over $1000.

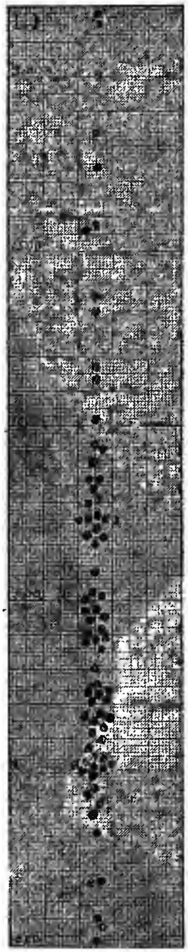
Similar studies of farm records in other counties show that the three main factors affecting labor income are the size of the farm business, the crop yields secured and the milk receipts per cow. Diversity, or the number of farm enterprises is also important, but it is a more difficult factor to measure. These factors are so important that they usually determine the labor income. The following tables show their relative importance in this part of Montgomery County.

EFFECT OF SIZE OF BUSINESS ON LABOR INCOME

The number of acres of crops grown is a good measure of the size of the farm business. In Table III the 76 farms are divided into five groups according to the number of acres of crops.

Table III. Effect of Size of Farm on Labor Income.

Acres of crops	Number farms	Average acres of crops	Number cows	Labor Income
60 and under	18	46	10	$326
60 to 70	12	66	14	343
70 to 90	22	80	16	477
90 to 120	12	106	20	636
Over 120	12	135	26	864



Distribution of Labor Income on 76 Mont. Co. Farms for 1914.

The labor income increased regularly as the size of the farm increased. The group of small farms having 46 acres of crops and 10 cows made an average labor income of $326. The twelve largest farms had 135 acres of crops and 26 cows. Their average labor income was $864 or over two and one-half times as much as the small farms.

In dairy regions another good measure of the size of the farm business is the number of cows kept. Table IV shows how number of cows affects labor income.

Table IV. Effect of Number of Cows on Labor Income.

Number of cows	Number farms	Average Number cows	Acres of crops	Labor Income
Under 12	20	9	60	$297
12 to 17.5	26	14	74	445
18 to 23.5	17	20	88	605
24 and over	13	30	127	820

The labor income increased with the number of cows as with crop acres. It will be noticed, however, that both number of cows and crop acres increased. The farms with large dairies were but little heavier stocked than the farms with small dairies.

One reason why larger farms are more profitable is simply because they have a larger business on which to make a profit. If there is a profit in growing a few acres of crops and keeping a few cows, it is only natural to expect a larger profit from more acres and more cows.

Another reason why larger farms pay better is shown in Table V. They use labor, horses and machinery more efficiently. As the size of the farm increases, more acres of crops are grown per man, per horse and per $100 invested in machinery.

Table V. Effect of Size of Farm on the Efficiency of Labor, Horses and Machinery.

Acres of crops	Acres of crops per man	Acres of crops per horse	Acres of crops per $100 worth of machinery	Labor Income
46	24	16	10	$326
66	35	18	9	343
80	36	21	11	477
106	39	25	14	636
135	47	22	15	864

CROP YIELDS

It is to be expected that good crop yields increase the farm profits. In order to compare the farms on a basis of crop yields, the percentage crop yield or "crop index" was figured for each farm. The crop index is the yield of all the crops expressed as a percentage of the average of the region. Table VI shows the 76 farms divided into groups by crop index. *

Table VI. Effect of Crop Yields on Labor Income.

Crop Yields	Number farms	Average crop yield	Acres of crops	Number cows	Milk receipts per cow	Labor Income
Under 80%	16	72%	88	14	$65	$380
80 to 99%	26	91%	85	18	67	437
100 to 119%	22	108%	75	16.5	79	508
120 and over	12	133%	85	19	87	821

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*Average yields of the 76 farms used to figure crop index:

Corn for grain	82 bu. ears	Barley	25 bu.
Silage corn	9.2 tons	Buckwheat	22 bu.
Potatoes	112 bu.	Hay	1.0 tons
Oats	35 bu.	Alfalfa	2.6 tons

Example showing how crop index is figured.

10 acres of silage corn yielding 110 tons
15 acres of oats yielding 500 bushels
40 acres of hay yielding 45 tons

65 total acres of crops

Divide the total yield of each crop by the average yield for that crop.

110 tons silage divided by 9.2, average yield, equals 12 acres required to grow 110 tons with average yield.

500 bushels oats divided by 35, average yield, equals 14.3 acres required to grow 500 bushels with average yield.

45 tons hay divided by 1 ton, average yield, equals 45 acres required to grow 45 tons with average yield.

With average yields it requires 71.3 acres to grow what this farm produced on 65 acres Reducing this to per cent, we have 71.3 divided by 65 equals 1.1x100 equals 110 crop index.

As is to be expected the farms with the best yields make the largest labor income. As the crop yields become better the quality of the cows also increased as is shown by the milk receipts per cow. The acres of crops and the number of cows remain about the same in the different groups.

QUALITY OF COWS

In this part of Montgomery County the dairy is the most important farm enterprise. Of the total receipts on these 76 farms 57 per cent were from milk. Taking into account the cattle sales and increase as well as milk, the dairy furnished over two-thirds of the total receipts. The number of cows per farm varied from 3 to 37, the average being 17. The quality of the cows kept is therefore very important.

Table VII. Effect of Quality of Cows on Labor Income.

Milk receipts per cow	Number farms	Av. milk receipts per cow	Number cows	Crop yield	Labor Income
Under $50	7	$41	12	94%	$17
$50 to $64	17	56	18	87%	377
$65 to $79	27	71	17	98%	479
$80 to $94	17	86	16	105%	565
$95 and over	8	104	18	116%	1175

The increase in labor income in this table is very marked. The 7 farms with average milk receipts per cow of $41 made an average labor income of $17. In the next group the milk receipts per cow are increased by $15 and the labor income increases by $360. The farms in this group had six more cows than the first which also helped to make the difference in labor income. In the third group the milk receipts per cow are again increased by $15 and the labor income increases by $100. The 8 farms with the best dairies received $104 per cow from milk. Their average labor income was $1175. It surely pays to keep good cows.

CROP SALES

Although this is distinctly a dairy region, the crop sales are also an important source of income. The crop sales averaged $372 or 18 per cent of the total farm receipts. Hay, including alfalfa, amounted to $169, oats and other small grains $45, corn $28 and straw $18. These crops which were grown primarily for feed constituted 70 per cent of the total crop sales. The remaining 30 per cent was from hops, potatoes, apples and other miscellaneous crops. Only four of the 76 farms grew hops, and potatoes and apples were grown mainly for home use, the surplus being sold. The opportunity for selling cash crops aside from the surplus of those grown for feed seems to be limited. It is a question whether it pays better to keep cows enough to use all of the feed grown or to plan to sell some of the crops. We have already seen that it pays to have a large dairy (Table III). Table VIII shows the 76 farms sorted by per cent of receipts from crops.

Table VIII. Effect of Per Cent of Total Receipts from Crops on Labor Income.

Per cent receipts from crops	Number of farms	Labor Income	Acres of crops	Crop Yield	Number of cows	Milk receipts per cow	Crop receipts
Under 10%	34	$328	78	95%	18	$72	$52
10 to 20 ...	19	757	86	103%	18	76	360
Over 20 ...	23	563	87	100%	14	73	856
Average		$506	83	100%	17	$73	$372

In studying the effect of crop sales on labor income, we must consider all the other factors previously discussed. The acres of crops and the yields as well as the number of cows kept determine the amount of crops sold. Also, the quality of the cows will affect the relative profits of marketing the crops directly or through the cows. Studies of the dairy business show that, on the average, only the best herds pay market prices for the feed consumed and the other costs of keeping the cows.

Crop sales amounted to less than 10 per cent of the total receipts on 34 of the farms. The labor income of these farms was $328. This group is below average in size by five crop acres and in yields by 5 per cent, which probably accounts for the low labor income. With more acres and better yields they would have larger surplus of crops to sell.

In the next group the crop receipts are about average. The average of these farms is good in all of the other four factors, and their labor income is $757.

The 23 farms with over 20 per cent of their receipts from crops made $563 or a little better than average. This group is above average in crop acres and below in number of cows but, although they are less heavily stocked, the yields are not decreased.

Taking the table as a whole, it seems to indicate that some crop sales in addition to a good sized dairy are advantageous. In some cases it may be advisable to keep fewer cows and sell more crops. At any rate crop sales are not so important as a large business with good cows and good crop yields.

TENURE

Of the 76 farms, 52 were operated by the owners, 16 were share rented, 6 were operated by owners who rented additional land on shares, 1 was part cash rented and part share rented and one was all cash rented. Table IX shows the farms grouped according to tenure.

Table IX. Tenure.

	Farm labor Income	Operator's labor Income	Landlord's per cent on investment	Acres of crops	Crop Yields	Number of cows	Milk receipts per cow
24 farms part rented or all rented	$703	$403	8.3	92	96%	20	$72
52 farms operated by owners	416	416	—	78	100%	16	74

The farm labor income was greater on the farms where all or part of the land was rented than those worked by the owners. The tenants themselves did not make as much as the owners because the rate of interest which the landlords received was high. The average landlord's interest was 8.3 per cent. The rented farms were larger and more heavily stocked than those operated by the owners. The rented farms had poorer cows and poorer yields.

COMBINATION OF FACTORS

The preceding tables show that the labor income increases with crop acres, number of cows, crop yields and milk receipts per cow. Table X shows the effect of all four factors on labor income. The farms are sorted by the number of these factors better than average.

Table X. Combined Effect of Four Factors on Labor Income. Averages of Factors: Crop Acres 83; Number of Cows 17; Crop Yields 100%; Milk Sold Per Cow $73.

Number of factors better than average	Number of farms	Labor income	Crop acres	Crop yield	Number of cows	Milk sold per cow
0	13	$169	61	86%	12	$57
1	23	343	73	90%	13	69
2	24	576	87	107%	18	71
3	10	659	102	105%	24	80
4	6	1331	114	118%	24	94

The 13 farms in the first group did not have any of the four factors above average. The farms in the next group have one out of the four better than average and so on. The importance of the factors is clearly shown in the labor income. There are only six farms above average in all four respects. All the others are low in one or more. The problem of the individual farmer is to find the weakest point in his particular case and improve it.

CONCLUSION

The most important factors for successful farming in this region are as follows:

1. A good sized business. This means a fairly large farm and a fairly large dairy. (Tables III and IV).
2. Good crop yields. (Table VI).
3. Good cows. (Table VII).
4. Crop sales. (Table VIII).

Which of these factors is the poorest on your farm? Which is the best? A comparison of your farm with the average of the 76 given in the following factor sheet will point out the weak and strong points of your farm business. Can you improve some of the factors for your farm and make a larger labor income?

Table XI. Factor Sheet for the Year 1914.

	Average of 76 farms	Your farm	Six farms above average in four factors
Labor Income	$506		$1331
SIZE			
Total capital	$10929		$15989
Total acres	135		186
Acres in crops	83		114
Number of cows	17		24
Number of men on year basis	2.3		3.1
Number of horses	4		4.3
CROP YIELDS			
Corn for grain ——— acres	4.4		5.3
Yield per acre	82 bu. ears		138
Silage corn ——— acres	8		16
Yield per acre	9.2 T.		9.4
Oats and mixed grain ...... acres	17.8		26
Yield per acre	35 bu.		36
Hay ——— acres	44.3		58
Yield per acre	1.0 T.		1.3
Alfalfa ——— acres	1.9		2.2
Yield per acre	2.6 T.		2.8
All crops	100%		118%
QUALITY OF COWS			
Value of milk sold per cow	$73		$94
EFFICIENCY OF OPERATION			
Labor cost (hired and family, including board)	$475		$812
Number of cows per man	7.4		7.6
Crop acres per man	36		37
Crop acres per horse	20		26
Crop acres per $100 worth of machinery	12		10
DIVERSITY			
Per cent of total receipts from milk	57		59
Per cent of total receipts from crops	18		23

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